

Herbicides China Monthly Report 202312

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Headline

Dec. is still a flat month for herbicide TC market. The majority of herbicides saw MoM price fall, but some products saw the price turn stable. Facing sluggish demand, herbicide TC producers continued to cut down their output this month. It is believed that the ex-works price of some herbicides TC will become stable next month, as market supply shrinks.

China's glufosinate-ammonium TC market has been depressed in 2023; for a long while, the price of glufosinate-ammonium TC was on the decline. The price rebounded in Nov., backed up by the producers' determination to end the price fall. Although a continuous bounce lacked solid support in Dec., the producers still held a positive view in the long-term development. Many of these companies have actively engaged in improving production technology for glufosinate-ammonium TC as well as in developing glufosinate-P business, in order to seize greater market share and reap more benefits.

On 19 Dec., the EI report of Shandong Huayang's 10,000 t/a pendimethalin TC project was approved by local government. Once the project is finished, the company will expand its pendimethalin TC capacity to 10,000 t/a.

In 2023, organophosphorus, sulfonylurea and amide herbicides still take the leading role in new herbicide TC projects in China.

The second-time ministry-level supervision and inspection this year on enterprises with major hazard installations for hazardous chemicals is currently in progress. The supervisions and inspections, launched by the MEM, will come to an end by the end of Dec. So far the work has gone close to the end in multiple provinces.

In Dec., the MEE deliberated and adopted two documents concerning pollutants: the Measures for Pollutant Discharge Permitting Administration (Revised Bill), and the Guiding Opinions on Further Improving Mechanism for the Response to Severe Air Pollution.

From Jan. to Dec. 2023, altogether 370 herbicide products have been approved of pesticide registration in China. A great majority of them are of low toxicity and the three most popular forms are OD, EC and SL.

In Dec., the downtrend in the FOB price of paraquat 42% TK in China continued, but the ex-works price of pure pyridine in China increased. However, although pyridine price was upped by the producers, it was infeasible in real trade.

In Dec., the ex-works price of diquat TK remained at a low level in China. Throughout the year 2023, diquat TK price first decreased continuously and then basically stabilised. Starting from mid-2023, new diquat TK capacity gradually came into operation, which resulted in more abundant supply in the market and greater power in buyers to negotiate a lower price.

Diquat TK projects have been progressing smoothly in China in 2023. For one thing, existing diquat TK producers have been pushing for capacity expansion; for another, some new ones have revealed their project plans. Leading diquat TK producers Nanjing Red Sun, Yongnong BioSciences and Shandong Luba have new capacity added in 2022–2023; they will put more emphasis on gaining greater market share in 2024.

In Oct. 2023, China's herbicide formulations were mainly exported to Brazil, Australia, the US, etc.; the export volume dropped by 17% MoM. Meanwhile, the import volume of herbicide formulations to China increased by 28.6% MoM; Malaysia became the largest import origin during this period.







Editor's note

Signs of recovery have been witnessed in some industries by late 2023. However, the PMI for China's manufacturing sector came in at 49.4 in Nov. 2023, down further from the figures in Sept. and Oct., according to the data from the National Bureau of Statistics. The overall recovery is yet to come, and for the pesticide industry, that will come still later.

In Dec., the demand for herbicides TC remained sluggish, under the influence of the general environment. Although some herbicides TC experienced price increase, that was propped up by the producers, not by sufficient demand, and thus the uptrend may not last. At present, for the majority of herbicides TC, there are still huge sales pressures. As it is time to bid goodbye to the year 2023, many producers have lowered their operating rates and mainly hope to liquidate their inventories. Let's see how the market develops after the spring.

The USD/CNY exchange rate in this newsletter is USD1.00 = CNY7.1104 on 1 Dec., 2023, sourced from the People's Bank of China. All the prices mentioned in this newsletter will include the VAT, unless otherwise specified.





Market analysis

Herbicide TC price continue to fall in Dec.

Summary: Dec. is still a flat month for herbicide TC market. The majority of herbicides saw MoM price fall, but some products saw the price turn stable. Facing sluggish demand, herbicide TC producers continued to cut down their output this month. It is believed that the ex-works price of some herbicides TC will become stable next month, as market supply shrinks.

In Dec., herbicides TC had an average 2.17% MoM slip in the ex-works price in China. The continuous price fall is closely related to the sluggish downstream demand. Although certain products had MoM price increases, the momentum was soon lost and by late-Dec. weak price performance was shown, simply because the increases were single-handedly created by suppliers.

Organophosphorus herbicides: The price of glyphosate TC dropped further as buyers pushed for a lower price. In contrast, the price of glufosinate-ammonium TC kept recovering, even though the downstream demand remained weak. The increase is the result of the producers' efforts to up the quotations, as the previous price was close to the cost price. Such an uptrend would not last for there is little sign of improvement in market demand.

Sulfonylurea herbicides: The producers of metsulfuron-methyl TC and tribenuron-methyl TC successfully maintained a stable price for the products. The prices of nicosulfuron TC, quizalofop-P-ethyl TC, bensulfuron-methyl TC and pyrazosulfuron-ethyl TC decreased MoM, mainly because orders were rare. With producers' efforts to maintain a steady price, these herbicides TC became more static in the price at the end of Dec.

Amide herbicides: For pretilachlor TC and acetochlor TC, though the price downtrend continued, the decline has much narrowed; the prices of butachlor TC and metolachlor TC stabilised. Producers of amide herbicides TC took active measures to stop the price from falling, such as propping up the price, as well as cutting output in Nov. and Dec.

Triazine herbicides: An overall price downtrend was witnessed for herbicides under this category. The prices of atrazine TC and ametryn TC started to decline in Dec. In retrospect, the stable price of the two products in Nov. was supported by new orders for stockpiling in the winter. As the stockpiling peak passed and orders plunged in Dec., the producers had no choice but to lower the price.





TABLE 1: Monthly ex-works prices of major herbicide TC products in China, Dec. 2023

Category	Product	CAS No.	Ex-works price in Dec. 2023 (RMB/t)	Ex-works price (USD/t)	RMB MoM change
Organophosphorus herbicide	95% Glufosinate ammonium technical	77182-82-2	68,200	9,591.58	6.70%
	95% Glyphosate technical	1071-83-6	26,800	3,769.13	-9.15%
Sulfonylurea herbicide	95% Nicosulfuron technical	111991-09-4	179,000	25,174.39	-4.30%
	95% Quizalofop-P-ethyl technical	100646-51-3	173,200	24,358.69	-6.38%
	96% Bensulfuron-methyl technical	83055-99-6	145,000	20,392.66	-3.33%
	95% Metsulfuron-methyl technical	74223-64-6	135,000	18,986.27	0.00%
	97% Pyrazosulfuron-ethyl technical	93697-74-6	215,000	30,237.40	-0.92%
	95% Tribenuron-methyl technical	101200-48-0	82,500	11,602.72	0.00%
	98% Florasulam technical	145701-23-1	457,900	64,398.63	0.00%
Amide herbicide	95% Pretilachlor technical	51218-49-6	30,000	4,219.17	-0.66%
	92% Acetochlor technical	34256-82-1	28,100	3,951.96	-0.35%
	92% Butachlor technical	23184-66-9	21,000	2,953.42	0.00%
	97% Metolachlor technical	51218-45-2	37,000	5,203.65	0.00%
Triazine herbicide	97% Atrazine technical	1912-24-9	29,000	4,078.53	-3.33%
	95% Ametryn technical	834-12-8	40,000	5,625.56	-10.11%
Dinitroaniline herbicide	95% Trifluralin technical	1582-09-8	40,000	5,625.56	0.00%
	95% Pendimethalin technical	40487-42-1	57,500	8,086.75	0.00%
Phenoxyacid herbicide	98% 2,4-D technical	94-75-7	14,800	2081.46	-9.20%
	97% MCPA technical	94-74-6	28,880	4,061.66	-3.73%
Diphenyl ether herbicide	95% Fomesafen technical	72178-02-0	133,900	18,831.57	0.00%





	97% Oxyfluorfen technical	42874-03-3	136,000	19,126.91	-6.21%
Aryloxyphenoxypropionic herbicide	95% Cyhalofop-butyl technical	122008-85-9	128,000	18,001.80	0.79%
	95% Haloxyfop-P-methyl technical	95977-29-0	116,000	16,314.13	-3.04%
	95% Clodinafop-propargyl technical	105512-06-9	174,000	24,471.20	-2.47%
Substituted phenylurea herbicide	97% Diuron technical	330-54-1	37,300	5,245.84	-2.51%
Pyrimidine herbicide	98% Fenclorim technical	3740-92-9	103,000	14,485.82	-2.83%
Others	80% Quinclorac technical	84087-01-4	133,000	18,705.00	0.00%
	85%-90% Clethodim technical	99129-21-2	66,000	9,282.18	-1.49%

Source:CCM

Glufosinate TC producers upgrade technology & product, while price only ticks up in late 2023

Summary: China's glufosinate-ammonium TC market has been depressed in 2023; for a long while, the price of glufosinate-ammonium TC was on the decline. The price rebounded in Nov., backed up by the producers' determination to end the price fall. Although a continuous bounce lacked solid support in Dec., the producers still held a positive view in the long-term development. Many of these companies have actively engaged in improving production technology for glufosinate-ammonium TC as well as in developing glufosinate-P business, in order to seize greater market share and reap more benefits.

Glufosinate-ammonium, as a main herbicide for genetically modified (GM) crops, has received much attention like glyphosate and dicamba in China in 2023, though the ex-works price of glufosinate-ammonium TC followed a downward trend for most of the time this year due to sluggish downstream demand. Besides, with large-scale new capacity put into operation in recent years, the once lucrative glufosinate-ammonium TC business saw nosedive in profits. Seeing this, Chinese glufosinate-ammonium TC producers ramped up efforts in technological transformation, especially in technologies to improve the synthesis of key intermediates, so as to increase yield and reduce costs. In addition, they stepped into business of glufosinate-P TC, a product with higher added value. This does not mean these glufosinate-ammonium TC producers hold a negative view of glufosinate-ammonium market. In fact, more companies will upgrade their glufosinate-ammonium TC production lines in China in 2024, along with the release of new glufosinate-P TC capacity.

Price trend of glufosinate-ammonium TC in 2023

- Jan.–Aug.: In this period, the ex-works price of glufosinate-ammonium TC kept falling in China; by Aug., the monthly price dropped by about 60% from the Jan. level. Demand for China's glufosinate-ammonium TC shrank as overseas stocks were plenty, and the slack demand forced the price down.
- Late Aug.–Oct.: In this period, the price basically stabilised, with small dips though. The stable price was the result of two factors: first, overseas stocks were much consumed and some buyers turned active in purchasing glufosinate-ammonium TC products, which stopped the price from going further down; second, the price of glufosinate-ammonium TC dropped close to the cost price, which drove the producers to lower the output, and even pushed some producers to suspend production and outsource TC products

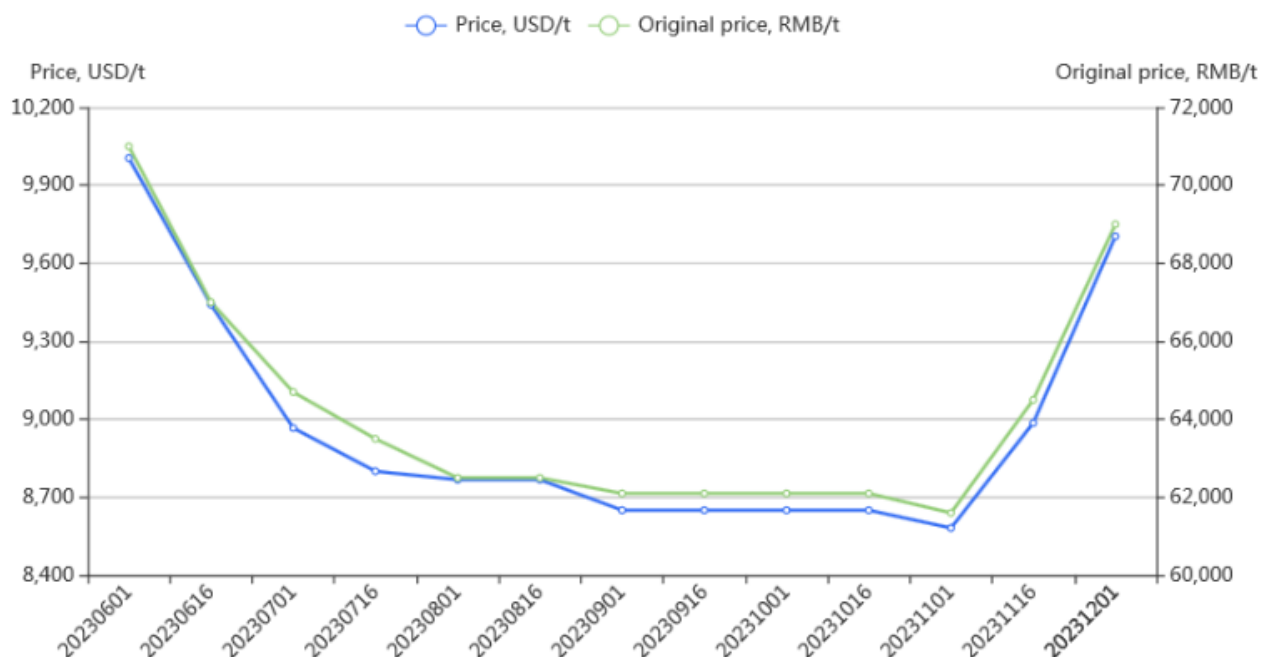




to maintain their production of glufosinate-ammonium formulations.

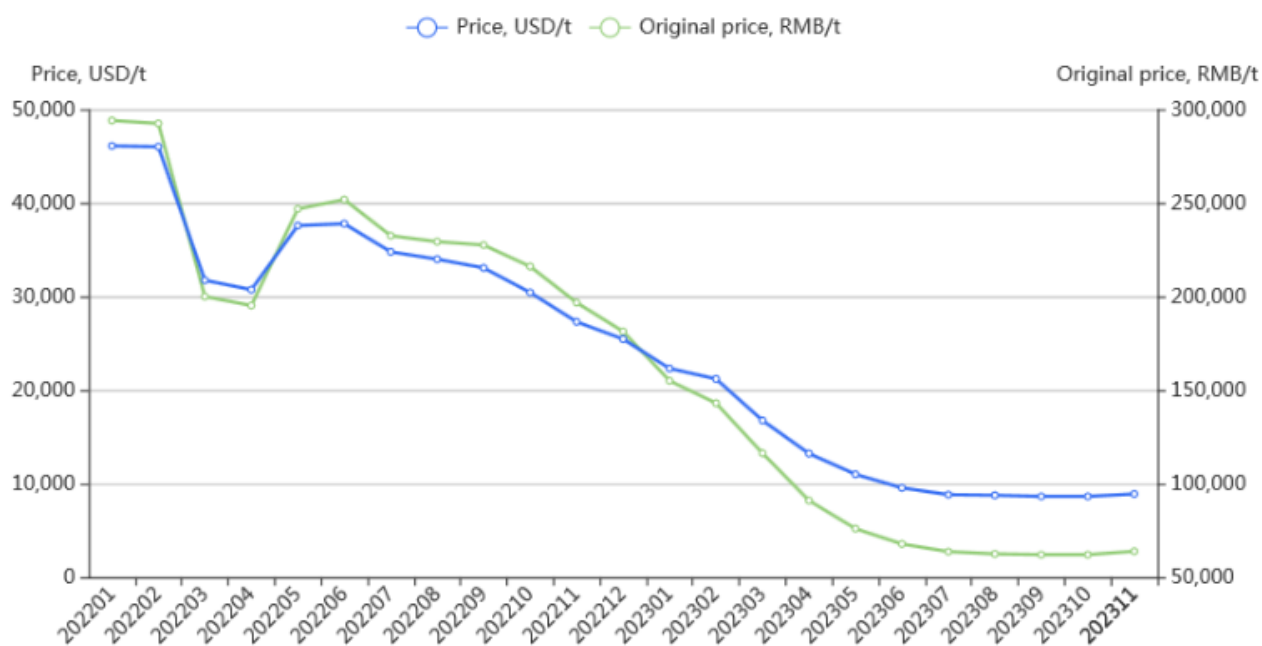
- Late Oct.–Dec.: After a small decrease in late Oct., the price bounced back in Nov., and in H1 Dec., some producers offered glufosinate-ammonium TC at a price crossed USD9,845/t (RMB70,000/t). As the peak season—stockpiling in the winter—came, sales volume of glufosinate-ammonium TC products grew, so did the price. However, it should be minded that actually, there was no significant increase in the downstream demand; other reasonable explanations except the producers' prop-up efforts can hardly be found for the quick price recovery. The reality is, at the end of this year, there still lack factors to support the glufosinate-ammonium TC price. In mid-Dec., some producers lowered their quotations for glufosinate-ammonium TC products, even though the majority of producers continued to prop up to avoid losses.

FIGURE 1: Ex-works price of 95% glufosinate-ammonium TC in China in H2 2023



Source: CCM



**FIGURE 2:** Monthly ex-works price of 95% glufosinate-ammonium TC in China, Jan. 2022–Nov. 2023

Source: CCM

Despite plunging profits, glufosinate-ammonium TC producers actively seek development via technological transformation and product upgrade

Following the nosedive in the price, profit margin of glufosinate-ammonium TC business has greatly contracted in recent years. The Dec. 2023 price is about 76% less than the Jan. 2022 price. The biggest glufosinate-ammonium TC producer Lier Chemical Co., Ltd. (Lier Chemical) is thus hit the hardest by the price fall. The company reported 22.42% YoY decline in its revenue in the first three quarters in 2023, and the net profit attributable to equity holders of the parent company down 62.47% YoY in the same period. Many other glufosinate-ammonium TC producers also reported decreases in profits from glufosinate-ammonium TC business, some even revealed short-term losses in the business.

The price fall is a natural result of the release of new capacity in recent years. The age of huge profits in this business is gone for ever. In the face of thinner profits, the glufosinate-ammonium TC producers have tried hard to boost profits through technological transformation and product upgrade.

Through technological transformation, glufosinate-ammonium TC producers can reduce production costs and thus fatten the profits. Major producers such as Lier Chemical and Jiangsu Sevencontinent Green Chemical Co., Ltd. (Jiangsu Sevencontinent) have achieved positive results in raising productivity and cutting costs via improving production process. It is reported that in 2021–2022, Lier Chemical cut the production costs from RMB60,000 (USD8,438) per tonne to RMB50,000 (USD7,032) per tonne by switching from Grignard reaction to aluminium method in the production of the intermediate methyldiethoxyphosphine, which spares the trouble of recovering 2-methyltetrahydrofuran and 1,2,4-trimethylbenzene, increases yield and product quality, reduces the use of organic solvents, and cuts VOCs emissions and wastewater discharge. The intermediate methyldichlorophosphine (MDP) used in Jiangsu Sevencontinent's





glufosinate-ammonium TC production is provided by its subsidiary Honghu Yitai Technology Co., Ltd. The subsidiary has improved the technology for MDP synthesis and helps Jiangsu Sevencontinent reduce the production costs to some extent.

Chinese glufosinate-ammonium TC producers also have their eyes on glufosinate-P TC. As of late 2023, there are only two active glufosinate-P TC producers in China—Lier Chemical and Yongnong BioSciences Co., Ltd. (Yongnong BioSciences). Yet the majority of glufosinate-ammonium TC producers have obtained pesticide registration certificates for glufosinate-P TC products. According to Lier Chemical, both glufosinate-ammonium and glufosinate-P are believed to enjoy a good prospect. By the end of 2023, the company has: in glufosinate-ammonium TC business, completed bringing down production costs and acquired registration certificates for a variety of glufosinate-ammonium products; in glufosinate-P TC business, built up 20,000 t/a enzyme route glufosinate-P TC capacity in Jinshi City of Hunan Province. It expects another 10,000 t/a glufosinate-P TC capacity (in Jinzhou City of Hubei Province) will come into operation in 2024. Limin Group Co., Ltd. (Limin Group) also expressed its optimistic view on the glufosinate-ammonium market in the future. Limin Group's subsidiary Hebei Veyong Bio-chemical Co., Ltd. (Veyong Bio-chemical) acquired government approval of the environmental impact report of the 1,000 t/a glufosinate-ammonium technological transformation and 10,000 t/a glufosinate-P construction project (phase I) in Sept. 2023. Veyong Bio-chemical adopts a process combining continuous gas-phase method and biological continuous catalytic method, and makes full use of existing equipment. The project has come into equipment installation and commissioning stage; trial run is expected to start before the 2024 Spring Festival.





Company and supply

Shandong Huayang to expand pendimethalin TC capacity

Summary: On 19 Dec., the EI report of Shandong Huayang's 10,000 t/a pendimethalin TC project was approved by local government. Once the project is finished, the company will expand its pendimethalin TC capacity to 10,000 t/a.

On 19 Dec., the environmental impact (EI) report of Shandong Huayang Technology Co., Ltd. (Shandong Huayang)'s 10,000 t/a pendimethalin TC project was approved by Tai'an Municipal Bureau of Ecology and Environment. The company has planned to expand total pendimethalin TC capacity to 10,000 t/a on the basis of its existing 1,500 t/a pendimethalin TC production equipment.

Shandong Huayang, founded in 1966, is located in the Ningyang Chemical Industrial Park, Ningyang County, Tai'an City, Shandong Province. After decades-long experiences and accumulation, the company has developed into a comprehensive chemical enterprise group, focusing on pesticide business and dabbling in many other businesses.

The company has two production plants in the Ningyang Chemical Industrial Park; both plants operate normally at present. In recent years, Shandong Huayang has proactively eliminated many old and outdated pesticide products in the two plants, as they are no longer suitable under current national industrial policies; only a small number of old and outdated products have been retained, and the lines operate normally. Meanwhile, it has upped the investments into novel pesticide projects to make up for the capacity eliminated as well as to enrich and optimise its pesticide product mix. At present, Shandong Huayang boasts production capacity of 2,000 t/a carbofuran TC, 2,000 t/a methomyl TC, 1,000 t/a aldicarb TC, 1,500 t/a buprofezin TC, 1,500 t/a pendimethalin TC, 1,000 t/a carbosulfan TC, 300 t/a fenclorim, 3,000 t/a O,O-dimethyl phosphoramidothioate, 1,000 t/a methyl isocyanate (MIC), plus large-scale pesticide formulation capacity, in the industrial park. Besides, it has a 5,000 t/a acephate project under construction, which will add 5,000 t/a acephate TC capacity upon completion.

From the capacity structure, it is safe to say pendimethalin TC is Shandong Huayang's main herbicide product. In the future, when it successfully brings its total pendimethalin TC capacity to 10,000 t/a, it could not only strengthen its competitiveness in this market and promote comprehensive development, but also improve market supply of pendimethalin TC.

Pendimethalin is a dinitroaniline herbicide; other dinitroaniline herbicides include trifluralin, ethalfluralin, oryzalin and butralin. Pendimethalin has extensive weed-killing spectrum and broad scope of application; it is applicable in orchards and fields for maize, soybean, cotton and vegetables to control annual gramineous weeds and broadleaf weeds including common crabgrass, green foxtail, annual bluegrass, *Alopecurus aequalis*, goosegrass, false daisy, black nightshade, lambsquarters and amaranths. Besides, it is low-toxic, volatile and easily photolysed, with steady control effect and strong soil binding force.

Currently, pendimethalin is one of the mature herbicide products that enjoy steady market growth, and it takes the lead among dinitroaniline herbicides. As China has rolled out industrial policies to promote the development of high-efficacy non-persistent pesticides, and the global market trend of substituting environment-friendly pesticides for high-toxicity large-residue pesticides, it is expected that





there is much larger room for the development of pendimethalin business.

China now has the largest pendimethalin production capacity in the world. Domestic capacity is highly concentrated. Besides Shandong Huayang, pendimethalin TC producers with large-scale capacity mainly include Jiangsu Yong'an Chemical Co., Ltd. and Shandong Binnong Technology Co., Ltd.

Some other Chinese pesticide enterprises have also announced pendimethalin TC projects. For instance, Yongnong BioSciences Co., Ltd. has revealed a plan to build 100 t/a pendimethalin TC capacity in its wholly-owned subsidiary Ningxia Yongnong BioSciences Co., Ltd. Yet admittedly, the capacity, even if soon built up, is too small to have big influence on pendimethalin supply in the Chinese market. It is also noteworthy that Zhejiang Heben Pesticide & Chemicals Co., Ltd. (Zhejiang Heben) once planned to build 3,000 t/a pendimethalin TC capacity in its wholly-owned subsidiary Sichuan Heben Crop Protection Co., Ltd., but later it dropped the plan.

Considering good long-term prospect of pendimethalin market, whether Zhejiang Heben will re-plan large-scale pendimethalin TC capacity and whether other pesticide enterprises will propose new pendimethalin projects are of interest to China's pesticide industry.

Organophosphorus, sulfonylureas and amides, popular choices in 2023 new herbicide projects

Summary: In 2023, organophosphorus, sulfonylurea and amide herbicides still take the leading role in new herbicide TC projects in China.

Incomplete statistics show that there are at least 18 new herbicide TC projects in China in 2023. Of these projects, 11 are new construction projects, and 7 technological transformation and expansion projects. Main products planned in these projects are organophosphorus, sulfonylurea and amide herbicides TC. Glyphosate TC, glufosinate-ammonium TC, glufosinate-P TC, nicosulfuron TC, florasulam TC and clethodim TC are popular; they have been planned in more than one project.



TABLE 2: New herbicide TC projects in China in 2023 (incomplete statistics)

No.	Project initiation time	Company	Project content	Progress as of Dec. 2023
1	Feb. 2023	Gansu Xinlianrun Biotechnology Co., Ltd.	It is a new construction project. It involves 200 t/a florasulam, 1,000 t/a tebuthiuron, 20,000 t/a phthalimide, 15,000 t/a tetrahydrophthalic anhydride, 12,000 t/a 1,2,3,6-tetrahydrophthalimide, 10,000 t/a tetrabromobisphenol A, 2,000 t/a 1,2-diphenylethane, 2,000 t/a N-formylmorpholine, 4,000 t/a 1,4-dioxane, 3,000 t/a 4-methylmorpholine, 5,000 t/a 4-methylmorpholine-N-oxide, 300 t/a 4,4'-(1-phenylethylidene)bisphenol, 1,000 t/a N-hydroxyphthalimide, 3,000 t/a 2-(hydroxymethyl)isoindoline-1,3-dione, 200 t/a trichloroacetonitrile, 30,000 t/a phosphorus pentachloride, 6,000 t/a rubber accelerator, 1,000 t/a phthalimide potassium, and 300 t/a trifloxystrobin intermediate (E)-methyl-2-(2-bromomethylphenyl)-2-methoxyiminoacetate.	El report has been approved.
2	March 2023	Shenyang Liansheng Chemical Industry Co., Ltd.	It involves 8,000 t/a acetochlor and 2,000 t/a butachlor.	El report has been approved.
3	March 2023	Jingzhou Sancaitang Chemical Technology Co., Ltd.	It involves 11,000 t/a phosphorus trichloride, 50,000 t/a phosphorus oxychloride, 5,000 t/a 4,6-dichloropyrimidine, 10,000 t/a glufosinate-P, 5,600 t/a 2-amino-4-(hydroxymethylphosphinyl)-L-ethyl butyrate and 200 t/a propiconazole.	Construction has been in progress.
4	April 2023	Shandong Cynda Chemical Co., Ltd.	It involves 2,500 t/a clethodim TC and 2,500 t/a clethodim TK.	The project was canceled.
5	April 2023	Anhui Jiuyi Agriculture Co., Ltd.	It is a transformation and expansion project. It will cancel the existing 1,000 t/a prothioconazole TC line and replace it with 600 t/a pyroxasulfone TC capacity; expand tembotrione TC capacity to 600 t/a from 200 t/a.	El report has been approved.
6	April 2023	Gansu Pingwen Chemical Co., Ltd.	It will be built in three phases. Phase I involves 600 t/a flufenacet, 40 t/a 4-fluoronitrobenzene, 5,000 t/a triclopyr-butotyl, 300 t/a triclopyr, 500 t/a pinoxaden, 460 t/a pinoxaden intermediates, along with production lines for by-products: sodium acetate trihydrate, hydrochloric acid, sodium chloride, potassium chloride, trisodium phosphate dodecahydrate, sulphuric acid and methanol. Phase II involves 300 t/a norflurazon, 350 t/a norflurazon intermediate, 600 t/a endothal, 2,000 t/a prodiamine intermediate, 500 t/a 2-[3-(trifluoromethyl)phenyl]acetonitrile, 3,500 t/a 2,4-dichloro-1-(trifluoromethyl)benzene, along with production lines for by-products: magnesium chloride hexahydrate, hydrochloric acid, sulphuric acid and sodium hypochlorite. Phase III involves 500 t/a 1,4-dimethylnaphthalene, 1,000 t/a mepiquat chloride, 2,000 t/a prodiamine intermediate, along with production lines for by-products: magnesium chloride hexahydrate, hydrochloric acid and sulphuric acid.	El report has been approved.



7	May 2023	Anhui Red Sun Biochemistry Co., Ltd.	Upon completion, the company will have 10,000 t/a glufosinate-P capacity.	EI report has been approved.
8	July 2023	Inner Mongolia Miraculous Crop Science Co., Ltd.	It is a new construction project. Upon completion, the company will have 30,000 t/a clethodim capacity.	EI report has been approved.
9	Aug. 2023	Hebei Lansheng Biotech Co., Ltd.	It is a technological transformation and expansion project. It will expand the clethodim capacity to 12,000 t/a from the current 4,000 t/a via modifying the production technology, and construct 1,000 t/a sethoxydim capacity.	EI report has been approved.
10	Aug. 2023	Borui Tiansheng (Xinjiang) Biotechnology Co., Ltd.	It will build production capacity for quizalofop-P-ethyl & intermediate, thifluzamide & intermediate, bispyribac-sodium & intermediate, florasulam & intermediate, penoxsulam & intermediate, nicosulfuron & intermediate, and topramezone.	EI report has been approved.
11	Aug. 2023	Baicaoyuan Biology Co., Ltd.	It will be built in two phases. According to the plan, it involves 86,000 t/a intermediates (include methyldiethoxyphosphine), 76,000 t/a TC products (include glufosinate-P TC) and 90,000 t/a formulation products (include glufosinate-P formulation).	The company has signed investment cooperation agreement with local government. The project is still at the fundraising stage.
12	Aug. 2023	Gansu Qinye Chemical Co., Ltd.	It is a transformation and expansion project. The company has planned to build new capacity of 6,000 t/a MCPA, 5,000 t/a MCPA-2-ethylhexyl ester, 1,000 t/a quinclorac TC, and 2,000 t/a co-production of sodium salt, 2-methyl-6-chlorophenol and 13% MCPA AS.	EI report has been approved.
13	Aug. 2023	Hebei Nongbiwei Biotechnology Co., Ltd.	It is a new construction project. Upon completion, the company will have production capacity of 5,400 t/a tebuthiuron, 6,300 t/a clethodim, 1,800 t/a imazapyr, 3,000 t/a mesotrione, 2,000 t/a nicosulfuron, 1,000 t/a quizalofop-P-ethyl, 2,400 t/a niclosamide, 1,200 t/a fenclorim and 10,000 t/a glufosinate-ammonium.	EI report has been approved.
14	Sept. 2023	Shandong Eshung Industrial Co., Ltd.	It will upgrade production equipment, increase the production of glufosinate-ammonium intermediate, and expand glufosinate-ammonium production capacity to 35,000 t/a from the current 21,000 t/a.	EI report has been approved.
15	Sept. 2023	Jiangsu Chunjiang Runtian	It is a technological transformation and expansion project. Upon completion, the company will have production capacity of 4,000 t/a glufosinate-P and 6,666 t/a 30%	EI report has been approved.





		Agrochemical Co., Ltd.	glufosinate-ammonium AS, along with by-product lines of 6,300 t/a ammonium chloride, 5,800 t/a sodium chloride and 4,000 t/a ethyl alcohol.	
16	Oct. 2023	Lanzhou Xinlongtai Biotechnology Co., Ltd.	It is a technological transformation and expansion project, which will be built in two phases. Phase I involves 9,000 t/a glyphosate TC and 1,000 t/a glyphosate AS; Phase II involves 18,000 t/a glyphosate TC and 2,000 t/a glyphosate AS.	EI report has been approved.
17	Oct. 2023	Shandong Weifang Rainbow Chemical Co., Ltd.	It will transform the existing 15,000 t/a glyphosate (IDA route) and 12,000 t/a glyphosate (glycine route) production equipment into 25,000 t/a glyphosate (glycine route) production equipment.	EI report has been approved.
18	Dec. 2023	Jiangxi Meijing Technology Co., Ltd.	500 t/a Flumioxazin	EI report has been approved.

Note: Projects presented here include new construction projects and transformation projects.

Source: CCM





Policy

2nd-Time ministry-level inspections on enterprises with major hazard installations close to an end

Summary: The second-time ministry-level supervision and inspection this year on enterprises with major hazard installations for hazardous chemicals is currently in progress. The supervisions and inspections, launched by the MEM, will come to an end by the end of Dec. So far the work has gone close to the end in multiple provinces.

Currently, the second-time ministry-level supervision and inspection this year, launched by the Ministry of Emergency Management of the People's Republic of China (MEM), on enterprises with major hazard installations for hazardous chemicals is still ongoing. This second-time supervision and inspection work, begun in Sept., will come to an end in late Dec.

Previously in May, the Work Safety Committee of the State Council issued the 2023 Action Plan for Nationwide Special Investigation and Rectification of Potential Risks of Major Accidents. The document requires that such hidden risks that may lead to major accidents should be eradicated, and major accidents as well as especially serious accidents should be prevented and curbed with firm determination. The special campaign started from that day on and lasts to the end of 2023. The work includes four stages: mobilisation and task assignment stage, enterprise self-investigation & self-correction and government assistance stage, precise law enforcement stage and drawing lessons for improvement stage.

Soon after, the MEM launched the first round special examination of major hazard installations on the basis of collaboration between local-level fire departments and emergency management departments. Going through enterprise-level self-examination, city-level cross-check, provincial-level random inspection and ministry-level supervision and inspection, the first round had full-coverage examination on more than 23,000 major hazard installations in about 7,000 enterprises across China with such installations for hazardous chemicals. Hidden risks in all aspects concerning major hazard installations, including safety management, intrinsically safe design, running, operation safety, equipment management, and fire and emergency response, had been investigated and dealt with properly. In Sept., the second round special examination via the four-level practice kicked off, based on the same inter-departmental collaboration and targeting on all the major hazard installations for hazardous chemicals. As of early Dec., all over China, more than 195,000 hidden risks had been found out and over 183,000 risks been removed via rectification, in the examination and inspection at the first three levels.

By early Dec., multiple provinces had announced that their work had come at least into provincial-level random inspection stage in the second round, such as:

- Jiangsu Province, a major production base of agrochemicals, started the second-time safety-oriented special examination and inspection in late Sept., to go deeper in the investigation and rectification of potential risks of major accidents, as well as to strengthen the control over major safety risks of hazardous chemicals. The provincial government scheduled to start the provincial-level inspection by late Oct. In the first round special examination launched in May, Jiangsu investigated hidden safety risks in chemical and pharmaceutical enterprises which produce, operate (storing included) and use hazardous chemicals; the work consists of enterprise-level self-examination and self-rectification, city-level full-coverage examination and provincial-level inspection. Before the end of May, enterprises with major hazard installations had completed self-examination and rating of each installation; the risks had been graded and measures for rectification worked out.
- Liaoning Province began provincial-level inspection on enterprises with major hazard installations for hazardous chemicals in late





Oct.

- Jiangxi Province had finished in-depth investigation of hidden safety risks in 518 major hazard installations in 187 enterprises within the province by late Nov. The provincial government has been promoting further advancement in rectification in enterprises found with hidden risks.
- Henan Province had begun provincial-level random inspection by early Nov.

MEE adopts 2 documents in Dec. to better regulate pollutant discharge

Summary: In Dec., the MEE deliberated and adopted two documents concerning pollutants: the *Measures for Pollutant Discharge Permitting Administration (Revised Bill)*, and the *Guiding Opinions on Further Improving Mechanism for the Response to Severe Air Pollution*.

On 25 Dec., the *Measures for Pollutant Discharge Permitting Administration (Revised Bill)* (hereafter referred to as the Pollutant Discharge Permitting Measures), the *Supervision and Administration Measures for Preparation of Environmental Impact Reports (Sheets) for Construction Projects (Revised Bill)* and the accompanying document the *Measures for Regulating Environmental Impact Reports* were deliberated and adopted at a ministerial meeting of the Ministry of Ecology and Environment of the People's Republic of China (MEE). This meeting points out that the Pollutant Discharge Permitting Measures further standardises the requirements for application and approval of pollutant discharge permit, clarifies the main responsibility, and strengthens the supervision and inspection, etc. It deepens, refines and makes more practicable the previous *Regulation on the Administration of Permitting of Pollutant Discharge*, and thus plays an important role in promoting the full implementation of pollutant discharge permitting system. With this new document, the Chinese government will continue to improve the regulatory system for stationary pollution sources, continue to deepen the reform of the permitting system, give full play to the comprehensive effectiveness of the system, and at the same time, carefully dovetail with other environmental management systems, fully implement "one-permit" management of pollutant discharges, and provide a powerful support for the advancement of accurate, scientific and lawful pollution control. The meeting also emphasises that the revision of the *Measures for Regulating Environmental Impact Reports* aims at further improving the management mechanism for environmental impact assessment (EIA), and enhancing the capability of EIA teams, and thus could fundamentally regulate the market, and ensure an effective role that EIA plays in prevention from the source.

It is noteworthy that, compared with the currently effective 2018 version of the *Measures for Pollutant Discharge Permitting Administration*, the newly revised document adds registration units and enterprises with a deadline for rectification into the scope of management. Besides, it further standardises the administration processes on the basis of the *Regulation on the Administration of Permitting of Pollutant Discharge*, and makes supplements and refinements to processes including application, approval, connection with EIA, renewal, change, cancellation, revocation, and forfeiture. Moreover, it clarifies the daily management content of licensed pollutant disposal units and registration units, strengthens the supervision during and after discharges, and promotes the "one-permit" management.

In addition, on 8 Dec., the *Guiding Opinions on Further Improving Mechanism for the Response to Severe Air Pollution* (hereafter referred to as the Guiding Opinions), along with 12 national ecological and environmental standards, and addition of as 29 chemical substances into the Inventory of Existing Chemical Substances in China, passed the deliberation at the ministry's executive meeting. It is reported that





to implement the Guiding Opinions after issuance, local governments will unify the standard of warning classification, improve regional joint emergency response mechanism, establish a technical system of severe air pollution response beforehand research and judgment, tracking, and evaluation, promote quick revision of severe air pollution emergency response plan at local level, strengthen effectiveness assessment of emergency response plans and efforts to continuously improve results and thus the ability to respond to severe air pollution. Focus will also be put on heavy pollution in fall and winter, and forecasting, consultation and judgment will be strengthened, so that good response performance can be achieved and emergency emission reduction measures implemented to the full.





Registration

Altogether 370 herbicide products approved of registration in 2023

Summary: From Jan. to Dec. 2023, altogether 370 herbicide products have been approved of pesticide registration in China. A great majority of them are of low toxicity and the three most popular forms are OD, EC and SL.

Data released by the Department of Agrochemical Management of the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA) show that from Jan. to Dec. 2023, altogether 370 herbicide products have been approved of pesticide registration in China. These herbicide products are of low toxicity (87% of the total), mild toxicity or moderate toxicity. The three most popular forms are OD, EC and SL, making up 23%, 19% and 16% of the total, respectively.

Many companies have several herbicide products approved of registration. Of these companies, Shandong Weifang Rainbow Chemical Co., Ltd. has the most herbicide products approved, with 30 products, followed by Shandong Binnong Technology Co., Ltd. with 14 herbicide products and Zenenorva Crop Protection (Anhui) Co., Ltd. with 13 herbicide products.



TABLE 3: Herbicide products approved of registration in China by form, 2023

No.	Form	Number
1	OD	84
2	EC	70
3	SL	58
4	TC	39
5	SC	37
6	WG	23
7	ME	16
8	TK	9
9	SE	8
10	WP	7
11	SP	5
12	EW	5
13	SG	3
14	GR	2
15	CS	2
16	GW	1
17	WT	1
Total		370

Note: The data are updated to 6 Dec., 2023.

Source: Department of Agrochemical Management, MARA

**TABLE 4:** Herbicide products approved of registration in China by toxicity, 2023

No.	Toxicity	Number
1	Low	323
2	Mild	38
3	Moderate	9
Total		370

Note: The data are updated to 6 Dec., 2023.

Source: Department of Agrochemical Management, MARA



TABLE 5: Major registrants of herbicide products approved of registration in China, 2023

No.	Registrant	Number
1	Shandong Weifang Rainbow Chemical Co., Ltd.	30
2	Shandong Binnong Technology Co., Ltd.	14
3	Zenenorva Crop Protection (Anhui) Co., Ltd.	13
4	Jilin Jinqiu Pesticide Co., Ltd.	8
5	Anhui Jintudi Biotechnology Co., Ltd.	6
6	Jiangsu Rotam Chemistry Co., Ltd.	6
7	Dalian Songliao Chemical Industry Co., Ltd.	6
8	Anhui Huaxing Chemical Industry Co., Ltd.	5
9	Anhui Lantian Agricultural Development Co., Ltd.	5
10	Anhui Yuanjing Crop Protection Co., Ltd.	5
11	Jiangsu Institute of Ecomones Co., Ltd.	5
12	Shandong Runyang Chemical Co., Ltd.	5
13	Xuchang Jian'an Changsheng Daily Chemical Co., Ltd.	5
14	Hunan Xinchangshan Agricultural Development Co., Ltd.	4
15	Jiangsu Repont Agrochemical Co., Ltd.	4
16	Shandong Aokun Crop Science Co., Ltd.	4
17	Shandong Zhongxin Kenong Bio-Technology Co., Ltd.	4
18	Weifang Sino-Agri Union Chemical Co., Ltd.	4
19	Zhejiang Tianyi Biotechnology Co., Ltd.	4
20	Zhejiang Zhongshan Chemical Industry Group Co., Ltd.	4
	Others	229
	Total	370

Note: The data are updated to 6 Dec., 2023.

Source: Department of Agrochemical Management, MARA



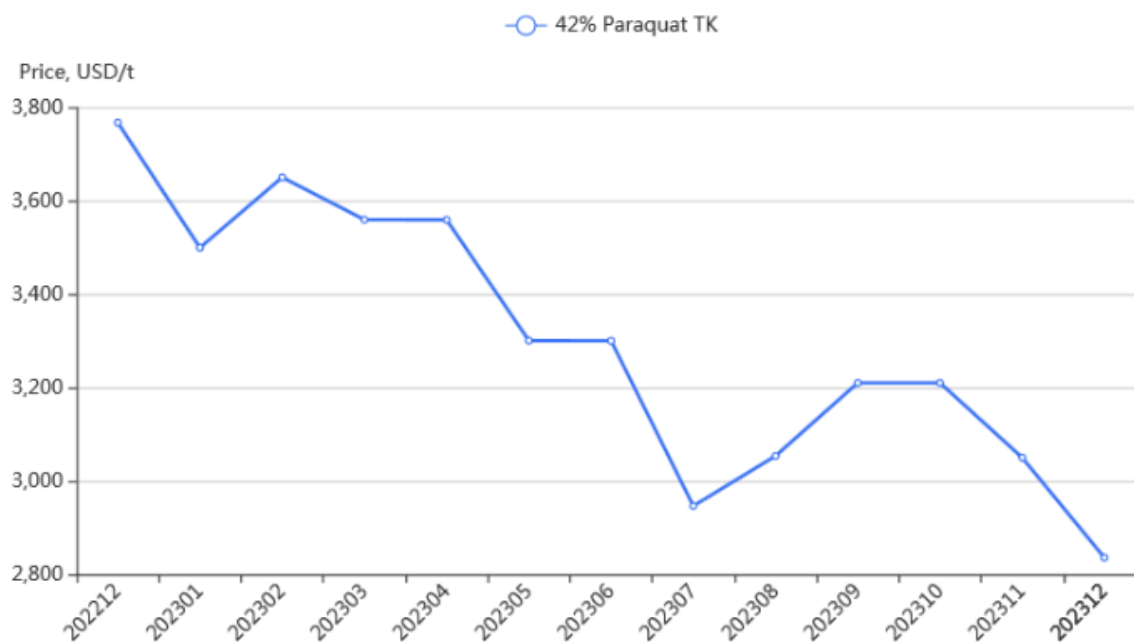
Paraquat and pyridine

Paraquat price heads further down, while pyridine offered at higher price in Dec.

Summary: In Dec., the downtrend in the FOB price of paraquat 42% TK in China continued, but the ex-works price of pure pyridine in China increased. However, although pyridine price was upped by the producers, it was infeasible in real trade.

CCM's price monitoring data show that the FOB price of paraquat 42% TK in China plummeted to USD2,836/t in Dec.; the price fell at a quicker pace than last month's. On a yearly basis, the price still registered a big dive. Slack overseas demand for paraquat TK has made the producers take a more cautious attitude in operation, and that has led to limited demand for pyridine from this field. The ex-works price of pure pyridine in China has been hovering at a low level for quite a while. However, investigations found that this month many pyridine producers offered the product at higher price than the Nov. price; their efforts to support the price leave room for buyers to negotiate a lower price. It should be noted that amid weak downstream markets, the upped pyridine price was infeasible in real trade. According to some pyridine buyers, their deals were stricken at low-level prices both in Nov. and Dec.

FIGURE 3: Monthly FOB price of paraquat 42% TK in China, Dec. 2022–Dec. 2023



Source:CCM



FIGURE 4: Monthly ex-works price of pure pyridine in China, Dec. 2022–Dec. 2023



Source:CCM

Weak market holds diquat TK price at low level in H2 2023

Summary: In Dec., the ex-works price of diquat TK remained at a low level in China. Throughout the year 2023, diquat TK price first decreased continuously and then basically stabilised. Starting from mid-2023, new diquat TK capacity gradually came into operation, which resulted in more abundant supply in the market and greater power in buyers to negotiate a lower price.

In Dec., the ex-works price of diquat TK fluctuated slightly at a low level in China. Throughout the year 2023, diquat TK price first decreased continuously from Jan. to July under sluggish demand, with the July price being close to the cost price; since July, the price has basically stabilised.

Diquat TK buyers have had greater power to negotiate a lower price, as the market has remained dull in general, while new diquat TK capacity gradually has come into operation starting from mid-2023 and thus supply grown more abundant in the market. The price of diquat TK then came to a relatively low level. However, it should also be noted that seeing new capacity come, the producers kept their operating rates quite low. As the price plunged to the cost price, the producers were ready to prop up the price, which put the price on a rather stable path.

**FIGURE 5:** Monthly ex-works price of 40% diquat TK in China, Dec. 2022–Dec. 2023

Source: CCM

China's diquat TK capacity keeps expanding in 2023

Summary: Diquat TK projects have been progressing smoothly in China in 2023. For one thing, existing diquat TK producers have been pushing for capacity expansion; for another, some new ones have revealed their project plans. Leading diquat TK producers Nanjing Red Sun, Yongnong BioSciences and Shandong Luba have new capacity added in 2022–2023; they will put more emphasis on gaining greater market share in 2024.

Diquat, an alternative to paraquat, has attracted great attention after the phase out of paraquat from Chinese market. China's diquat capacity has expanded quickly in recent years, and leading diquat TK producers finished construction of new capacity in 2022–2023. In the coming 2024, they will focus on gaining greater market share. Some other pesticide producers also announced their diquat project plans, with the hope of getting some share in this market.



TABLE 6: Diquat TK capacity (potential included) in major Chinese producers

No.	Producer	Parent company	Diquat TK capacity as of late 2023, t/a	Status
1	Nanjing Red Sun Biochemical Co., Ltd.	Nanjing Red Sun Co., Ltd.	25,000	Normal operation
2	Anhui Red Sun Biochemistry Co., Ltd.		10,000	In trial run
3	Ningxia Yongnong BioSciences Co., Ltd.	Yongnong BioSciences Co., Ltd.	18,000	Normal operation
4	Yongnong BioSciences Co., Ltd. (Zhejiang base)		15,000	Environmental impact (EI) report has been approved
5	Dezhou Luba Fine Chemical Co., Ltd.	Shandong Luba Chemical Co., Ltd.	10,000	In trial run
6	Weifang Nuchlor Chemical Co., Ltd.		13,000	EI report has been approved

Source:CCM

In terms of product structure, technology and production scale, Nanjing Red Sun Co., Ltd. (Nanjing Red Sun) has the greatest advantages in diquat industry over other domestic competitors. It is the only one that has diquat dibromide TK production lines in China. Its subsidiary Nanjing Red Sun Biochemical Co., Ltd. (Red Sun Biochemical) built up diquat TK lines—20,000 t/a diquat dichloride TK and 5,000 t/a diquat dibromide TK lines—in late 2022, and these lines meet design capacity in 2023. In March 2023, Nanjing Red Sun disclosed that it had applied for pesticide registrations for diquat dichloride products in multiple countries including Brazil, Vietnam, Myanmar, Australia and Paraguay, and had gone through the formalities in parts of them. In May 2023, Nanjing Red Sun's sub-sub-subsidiary Anhui Red Sun Biochemistry Co., Ltd. put its 10,000 t/a diquat production capacity—phase I of the 5,000 t/a 2,2'-dipyridyl and 10,000 t/a diquat project—into trial operation, after passing environmental protection check and acceptance.

Yongnong BioSciences Co., Ltd. (Yongnong BioSciences) is another big diquat TK supplier in China. Its wholly-owned subsidiary Ningxia Yongnong BioSciences Co., Ltd. (Ningxia Yongnong) has had active diquat TK capacity of 18,000 t/a in the Ningxia production base; most of the products are now for export. According to Ningxia Yongnong, Ningxia base has easy access to raw materials, as well as cheaper energy (including water, electricity and gas) and labour, and thus it has cost advantage over others. However, compared with main competitors like Nanjing Red Sun and Shandong Luba Chemical Co., Ltd. (Shandong Luba), Yongnong BioSciences has disadvantage in geographic location and industrial chain structure. The Ningxia base is distant from the main market in southeastern parts of China, where the majority of formulation producers are located. Higher transport costs to the main market in China forced Yongnong BioSciences to accept smaller share in that market. In 2023, the majority of Ningxia Yongnong's diquat TK products have been exported from nearby ports, and long-distance transport to the southeastern parts has been basically avoided. Of course, Yongnong BioSciences will not give up domestic market. In Nov. 2023, the company revealed that the EI report of high-efficacy low-toxicity pesticides and key intermediates project had been approved; the project will construct 15,000 t/a 40% diquat TK capacity in its plant in the Hangzhou Bay Shangyu



Economic and Technological Development Zone, Shaoxing City, Zhejiang Province. Through this project, Yongnong BioSciences could build better ties with the main market in China. Yet it should be noted that flagship products of Yongnong BioSciences are glufosinate-ammonium projects. Unlike Nanjing Red Sun and Shandong Luba, it has relatively weaker foundation in the business of pyridine and the derivatives.

Currently, despite smaller diquat TK capacity than that in Nanjing Red Sun and Yongnong BioSciences, Shandong Luba has solid foundations in equipment for pyridine materials, complete industrial chain and products, as well as strong market channels. With such a strong basis, the company can develop the diquat TK business fast. Its holding subsidiary Weifang Nuchlor Chemical Co., Ltd. launched a 13,000 t/a diquat TK project; EI report of the project was approved in Jan. 2023. Besides, its wholly-owned subsidiary Dezhou Luba Fine Chemical Co., Ltd. built up and put into trial run the 10,000 t/a diquat TK lines in Oct. this year; by the end of 2023, parts of the lines can supply diquat TK products stably.

Moreover, Lier Chemical Co., Ltd. (Lier Chemical), not engaged in diquat TK business so far, announced in June 2023 that it had a plan to build 20,000 t/a diquat TK capacity in its subsidiary Jingzhou Sancaitang Chemical Technology Co., Ltd. Although progress of this project had not been seen as of late 2023, Lier Chemical does have advantage in this market, considering its overall strength and product portfolio. Plus, it has obtained pesticide registration certificate for diquat TK. Apart from Lier Chemical and the active diquat TK producers, pesticide producers that have acquired registration certificate for diquat TK products in China as of Dec. 2023 are: Shandong Weifang Rainbow Chemical Co., Ltd., Shandong Weunite Biotech Co., Ltd., Guang'an Lier Chemical Co., Ltd., Anhui Costar Biochemical Co., Ltd., Anhui Guangxin Agrochemical Co., Ltd. and Jiangsu Noon Crop Science Co., Ltd.





Trade analysis

In Oct., China's herbicide formulation Imp. volume ups MoM, while Exp. volume drops

Summary: In Oct. 2023, China's herbicide formulations were mainly exported to Brazil, Australia, the US, etc.; the export volume dropped by 17% MoM. Meanwhile, the import volume of herbicide formulations to China increased by 28.6% MoM; Malaysia became the largest import origin during this period.

According to the statistics from General Administration of Customs of China (China Customs), in Oct. 2023, China exported 144,157 tonnes (actual volume, the same hereafter) of herbicide formulation products. The volume dove 17% MoM. As regards herbicide formulation imports, in the same month, China imported 545 tonnes of herbicide formulation products; the volume jumped up by 28.63% MoM.

In terms of export, export price averaged USD4.78/kg in Oct. 2023, up 12.74% MoM. Major export destinations of China's herbicide formulations were Brazil, Australia, the US, Indonesia, etc.; the volume to the top four destinations accounts for 24.34%, 8.31%, 6.37%, and 4.27%, respectively, of the monthly total.

In terms of import, average import price of herbicide formulations shot up by 375.76% MoM to USD53.19/kg in Oct. 2023. Malaysia became the largest import origin in Oct.; the volume from this origin makes up almost 40% of the monthly total.

TABLE 7: Exports of herbicide formulations from China, Sept. and Oct. 2023

Time	Actual volume, kg	Average price, USD/kg
Oct. 2023	144,157,006	4.78
Sept. 2023	173,676,774	4.24

Source:China Customs





TABLE 8: Major destinations of herbicide formulations exported from China, Sept. and Oct. 2023

No.	Oct. 2023			Sept. 2023		
	Destination	Actual volume, tonne	Share	Destination	Actual volume, tonne	Share
1	Brazil	35,089	24.34%	Brazil	43,752	25.19%
2	Australia	11,979	8.31%	Australia	20,303	11.69%
3	The US	9,178	6.37%	The US	10,473	6.03%
4	Indonesia	6,151	4.27%	Indonesia	9,708	5.59%
5	Canada	5,954	4.13%	Tanzania	6,056	3.49%
6	Nigeria	4,997	3.47%	Ghana	5,560	3.20%
7	The Philippines	4,139	2.87%	Nigeria	4,809	2.77%
8	South Africa	4,066	2.82%	The Philippines	4,232	2.44%
9	Argentina	3,892	2.70%	Canada	4,153	2.39%
10	Ghana	3,818	2.65%	Thailand	4,102	2.36%
	Others	54,894	38.07%	Others	60,529	34.85%
	Total	144,157	100.00%	Total	173,677	100.00%

Source:China Customs

TABLE 9: Imports of herbicide formulations to China, Sept. and Oct. 2023

Time	Actual volume, kg	Average price, USD/kg
Oct. 2023	544,901	53.19
Sept. 2023	423,607	11.18

Source:China Customs



TABLE 10: Major origins of herbicide formulations to China, Sept. and Oct. 2023

No.	Oct. 2023			Sept. 2023		
	Origin	Actual volume, tonne	Share	Origin	Actual volume, tonne	Share
1	Malaysia	214	39.27%	Germany	233	54.95%
2	The US	116	21.28%	India	100	23.58%
3	Indonesia	93	17.06%	Indonesia	50	11.79%
4	India	75	13.76%	Australia	40	9.43%
	Others	47	8.63%	Others	1	0.25%
	Total	545	100.00%	Total	424	100.00%

Source: China Customs



Brief news

Under growing demand, herbicide TC prices have mixed trends in early Dec.

The autumn and winter sowing in China had completed by late Nov., and currently there is rigid demand for herbicides TC in the market.

Quotations for some mainstream herbicides TC in early Dec. are:

- The price of 95% glyphosate TC continued to fall, quoted at USD3,868/t (RMB27,500/t);
- The price of 95% glufosinate-ammonium TC witnessed an increase in quotation, reaching USD9,845/t (RMB70,000/t);
- 40% Diquat TK was quoted at USD3,516/t (RMB25,000/t). Its producers have faced cost pressure, and currently, the market mainly consumes the inventory for the product;
- 95% Oxadiazon TC was quoted at USD23,909/t (RMB170,000/t). Rising operating rates in the producers made market competition more intense.

Shandong Cynda has plan to build capacity for picolinafen & fepoxydim

On 5 Dec., Shandong Cynda Chemical Co., Ltd. (Shandong Cynda) announced that the board had approved the proposal of building a 1,800 t/a pesticides TC and 500 t/a safener project by its wholly-owned subsidiary Liaoning Cynda Chemical Co., Ltd. in the Chemical Industrial Park of Huludao Economic Development Zone, Huludao City, Liaoning Province.

An estimated total of USD25.32 million (RMB180 million) will be invested in the project, which will construct production capacity for novel herbicides like picolinafen, fepoxydim, and oxaziclomefone, in an expected nine-month construction period. So far, the subsidiary has obtained the project filing certificate and the review opinion on the safety conditions of the project.

Zhejiang releases 2023 1st-batch chemical parks with lower safety risk

On 11 Dec., the Office of the Work Safety Committee of Zhejiang Province announced the province's first batch of chemical industrial parks with lower safety risk level for 2023, wherein the following 16 parks are included:

- Ningbo Petrochemical Economic and Technological Development Zone, and Ningbo Daxie Development Zone in Ningbo City;
- Dongtou Daxiaomen Lingang Petrochemical Industrial Zone in Wenzhou City;
- China Chemical New Materials (Jiaxing) Park, Petrochemical Industrial Park of Zhengjiang Dushan Port Economic Development Zone, and New Materials and Chemical Industrial Park of Haiyan Economic Development Zone in Jiaxing City;
- New Materials Industrial Park of Wuyi Economic Development Zone, Life and Health Industrial Park (Hengdian) of Dongyang Economic Development Zone, and Health and Biology Industrial Park Chemical Cluster of Jinhua Economic and Technological Development Zone in Jinhua City;
- Quzhou Smart New City High-tech Area, Changshan Economic Development Zone Chemical Cluster, New Energy and New Materials Industrial Park of Jiangshan Economic Development Zone, and Chemical Industrial Park of Qujiang Nianli Industrial Function Zone in Quzhou City;
- Zhoushan Green Petrochemical Base in Zhoushan City;
- Zhejiang Xianju Economic Development Zone, Chemical Industrial Park of Taizhou Bay Economic and Technological Development Zone in Taizhou City.

Weifang Rainbow plans to build 2,000 t/a pyroxasulfone project

On 8 Dec., Shandong Weifang Rainbow Chemical Co., Ltd. (Weifang Rainbow) obtained record filing certificate for a pyroxasulfone project in Shandong Province. The company has planned to invest USD42.19 million (RMB300 million) to construct 2,000 t/a





pyroxasulfone production capacity in Binhai Economic and Technological Development Zone in Weifang City. The project will cover a site area of 19,130 square metres.

Weifang Rainbow has actively engaged in pyroxasulfone registration application in China and key target countries abroad, following a three-step product registration plan. It expects to obtain registration certificates in China and some important overseas markets in H2 2024, and to crack different target markets in H1 2025, with the support of the registrations.

Fengle Agrochemical restarts 2,400 t/a herbicides TC expansion project

On 11 Dec., basic environmental impact assessment information on Anhui Fengle Agrochemical Co., Ltd. (Fengle Agrochemical)'s 2,400 t/a herbicides TC expansion, and energy-saving, resource-recovering, technological upgrading project (resubmission for approval) was publicised. With investment increased to USD9.84 million (RMB70 million), the project features expanding capacity for nicosulfuron and quizalofop-P-ethyl via improvement of production process, as well as building a new workshop for fluroxypyr-meptyl. Specifically, the project will:

- In nicosulfuron workshop: Of the current four synthesis processes, only the nicosulfuron synthesis process will be retained in the workshop, and the ammonia ester synthesis process removed to a new technological upgrading workshop, while synthesis processes of nicotinamide and 2-aminosulfonyl-N,N-dimethylnicotinamide will be cut. With no equipment added, nicosulfuron capacity will increase from 200 t/a to 800 t/a upon completion.
- In quizalofop-P-ethyl workshop: Of the current five synthesis processes, four processes will be retained, while the chlorination process removed to the new technological upgrading workshop. With no equipment added, quizalofop-P-ethyl capacity will expand from 300 t/a to 600 t/a when the project is complete.
- Construct a fluroxypyr-meptyl workshop with 1,000 t/a capacity.

EI report of Hebei Nongbiwei's 33.1kt/a green pesticide TC & by-product project accepted

On 13 Dec., Cangzhou Lingang Economic and Technological Development Zone announced the acceptance of the environmental impact (EI) report of Hebei Nongbiwei Biotechnology Co., Ltd. (Hebei Nongbiwei)'s 33,100 t/a green pesticide TC and series of by-products project. With investment of USD510.80 million (RMB3,632 million), the project mainly involves the construction of three production lines for tebuthiuron (5,400 t/a in total), three lines for clethodim (6,300 t/a in total), and one production line each for 1,800 t/a imazapyr, 3,000 t/a mesotrione, 2,000 t/a nicosulfuron, 1,000 t/a quizalofop-P-ethyl, 2,400 t/a nicosamide, 1,200 t/a fenclorim and 10,000 t/a glufosinate-ammonium.

MARA releases 48th-batch accredited pesticide registration experiment units

On 19 Dec., the Ministry of Agriculture and Rural Affairs of the People's Republic of China (MARA) announced the 48th batch of accredited pesticide registration experiment units, including four units as followings:

- Hefei Gaoer Institute of Life and Health Sciences Co., Ltd. and Tai'an Kecheng Jiahe Agricultural Technology Co., Ltd., both eligible for herbicide efficacy trials and tests of pesticide residues in crops;
- Anhui Great-Agri Technology Co., Ltd., eligible for tests of pesticide residues in crops;
- Guizhou Jiandee Technology Co., Ltd., eligible for product quality inspection tests.

Ningxia issues emissions trading rules

On 12 Dec., the Department of Ecology and Environment of Ningxia Hui Autonomous Region announced the emissions trading rules for





the Region to better regulate trading activities and improve trading process. Subject matters of the emissions trading include types of emission permits, amount of emission allowances, and assignable terms of emissions right (the term for subject matter transfer is set at five years).

Trading methods for emissions right include open bidding, transfer by agreement, and simple transfer for small emission projects:

- Open bidding follows the principle of "price priority", the number of emission allowances will be allocated to transferees in descending order of offer price;
- Transfer by agreement refers to the method whereby the transferors and the intended transferees negotiate to determine the price and other elements of the transaction, and deals shall be made after the agreed terms are publicised on certain platforms;
- Simple transfer is applicable for construction projects with their environmental impact reports approved by ecological and environmental authorities and the main pollutant emission indicators verified, as well as the annual emission of sulphur dioxide and nitrogen oxides both capped on one tonne, chemical oxygen demand capped on 0.5 tonne, and ammonia nitrogen capped on 0.25 tonne. Municipal ecological environment department in charge of the district (including the Ningdong Energy and Chemical Industry Base) in which such a construction project is located is responsible for allocating parts of the governmental reserved emission allowances to eligible construction projects in accordance with the "immediate response upon inquiry" principle.

Hebei Airuiyin plans to build 12,920 t/a pesticide intermediates project

On 22 Dec., general information of Airuiyin (Hebei) Green Biotechnology Co., Ltd. (Hebei Airuiyin)'s 12,920 t/a pesticide intermediates project was publicised on the Cangzhou Lingang Economic and Technological Development Zone website. The company's planned investment in this project totals USD27.33 million (RMB194.35 million), of which 11.91% or USD3.26 million (RMB23.15 million) is for environmental protection. Upon completion, the company will have production capacity for industrial bromine (10,000 t/a), ethyl 2-bromobutyrate (1,000 t/a), methyl 2-bromopropionate (1,000 t/a), phosphorus oxybromide (400 t/a), 5-bromonicotinic acid (500 t/a), 5-hydroxynicotinic acid (10 t/a), and 5-aminonicotinic acid (10 t/a).

EI report of Weifang Kaisheng's 41,600 t/a acyl chloride series project approved

On 26 Dec., the Weifang Municipal Bureau of Ecology and Environment announced its approval of the environmental impact (EI) report of Weifang Kaisheng New Materials Co., Ltd. (Weifang Kaisheng)'s 41,600 t/a acyl chloride series reconstruction project. With total investment of USD1.69 million (RMB12 million), of which 0.42% or USD7,032 (RMB50,000) is for environmental protection. Upon completion, the company will have in its plant in the Changyi Xiaying Chemical Industry Park, Changyi City, Shandong Province, 8,300 t/a production capacity for isophthaloyl dichloride/terephthaloyl chloride and 33,300 t/a for chloroacetyl chloride.





Price update

Ex-works prices of key herbicide raw materials in China, 8 Dec., 2023

TABLE 11: Ex-works prices of key herbicide raw materials in China, 8 Dec., 2023

Raw Materials	20231108		20231208	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% Glycine	11,668	1,625.57	12,200	1,715.8
92% Iminodiacetonitrile	8,600	1,198.14	8,600	1,209.5
99% Isopropylamine	9,550	1,330.49	9,550	1,343.1
98% N-(Phosphonmethyl) Iminodiacetic acid	18,000	2,507.73	15,500	2,179.91
99% Phosphorus trichloride	6,705	934.13	6,640	933.84
99.9% Pyridine	20,100	2,800.3	19,300	2,714.33

Note: Ex-works price includes VAT.

Source: CCM

Ex-works prices of main herbicides in China, 8 Dec., 2023





TABLE 12: Ex-works prices of main herbicides in China, 8 Dec., 2023

Product	20231108		20231208	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% 2,4-D technical	16,300	2,270.89	15,200	2,137.71
92% Acetochlor technical	28,600	3,984.51	28,100	3,951.96
97% Atrazine technical	30,000	4,179.55	29,000	4,078.53
96% Bensulfuron-methyl technical	150,000	20,897.77	145,000	20,392.66
92% Butachlor technical	21,000	2,925.69	21,000	2,953.42
95% Clomazone technical	89,000	12,399.34	79,000	11,110.49
95% Cyhalofop-butyl technical	123,000	17,136.17	128,000	18,001.8
97% Diuron technical	38,500	5,363.76	37,300	5,245.84
98% Fenclorim technical	106,000	14,767.76	103,000	14,485.82
95% Fenoxaprop-P-ethyl technical	154,000	21,455.04	140,000	19,689.47
96% Fluroxypyr technical	96,000	13,374.57	95,000	13,360.71
95% Fomesafen technical	133,900	18,654.74	133,900	18,831.57
95% Glufosinate ammonium technical	61,600	8,582.02	69,000	9,704.1
95% Glyphosate technical	29,900	4,165.62	27,600	3,881.64
95% Haloxyfop-P-methyl technical	118,200	16,467.44	116,000	16,314.13
97% Metolachlor technical	37,000	5,154.78	37,000	5,203.65
95% Metsulfuron-methyl technical	135,000	18,807.99	135,000	18,986.27





Product	20231108		20231208	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
95% Nicosulfuron technical	187,200	26,080.41	179,000	25,174.39
97% Oxyfluorfen technical	145,000	20,201.18	140,000	19,689.47
95% Pendimethalin technical	57,500	8,010.81	57,500	8,086.75
95% Pretilachlor technical	31,000	4,318.87	30,000	4,219.17
97% Pyrazosulfuron-ethyl technical	225,000	31,346.65	215,000	30,237.4
80% Quinclorac technical	133,000	18,529.35	133,000	18,705
95% Quizalofop-P-ethyl technical	185,000	25,773.91	176,000	24,752.48
95% Tribenuron-methyl technical	82,500	11,493.77	82,500	11,602.72
95% Trifluralin technical	40,000	5,572.74	40,000	5,625.56

Note: Ex-works price includes VAT.

Source: CCM

Shanghai port prices of main herbicides in China, 8 Dec., 2023





TABLE 13: Shanghai port prices of main herbicides in China, 8 Dec., 2023

Product	20231108		20231208	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
98% 2,4-D technical	16,800	2,340.55	15,700	2,208.03
92% Acetochlor technical	29,100	4,054.17	28,600	4,022.28
97% Atrazine technical	30,500	4,249.21	29,500	4,148.85
96% Bensulfuron-methyl technical	150,500	20,967.43	145,500	20,462.98
92% Butachlor technical	21,500	2,995.35	21,500	3,023.74
95% Clomazone technical	89,500	12,469	79,500	11,180.81
95% Cyhalofop-butyl technical	123,500	17,205.83	128,500	18,072.12
97% Diuron technical	39,000	5,433.42	37,800	5,316.16
98% Fenclorim technical	106,500	14,837.42	103,500	14,556.14
95% Fenoxaprop-P-ethyl technical	154,500	21,524.7	140,500	19,759.79
96% Fluroxypyr technical	96,500	13,444.23	95,500	13,431.03
95% Fomesafen technical	134,400	18,724.4	134,400	18,901.89
95% Glufosinate ammonium technical	62,100	8,651.68	69,500	9,774.41
95% Glyphosate technical	30,400	4,235.28	28,100	3,951.96
95% Haloxyfop-P-methyl technical	118,700	16,537.1	116,500	16,384.45
97% Metolachlor technical	37,500	5,224.44	37,500	5,273.96
95% Metsulfuron-methyl technical	135,500	18,877.65	135,500	19,056.59





Product	20231108		20231208	
	Original Price (RMB/t)	Price (USD/t)	Original Price (RMB/t)	Price (USD/t)
95% Nicosulfuron technical	187,700	26,150.07	179,500	25,244.71
97% Oxyfluorfen technical	145,500	20,270.84	140,500	19,759.79
95% Pendimethalin technical	58,000	8,080.47	58,000	8,157.07
95% Pretilachlor technical	31,500	4,388.53	30,500	4,289.49
97% Pyrazosulfuron-ethyl technical	225,500	31,416.31	215,500	30,307.72
80% Quinclorac technical	133,500	18,599.01	133,500	18,775.32
95% Quizalofop-P-ethyl technical	185,500	25,843.57	176,500	24,822.79
95% Tribenuron-methyl technical	83,000	11,563.43	83,000	11,673.04
95% Trifluralin technical	40,500	5,642.4	40,500	5,695.88

Note: Port price equals the ex-works price plus the transport fee from the factory to the port, and the ex-works price includes VAT.

Source: CCM

FOB Shanghai prices of main herbicides in China, 8 Dec., 2023





TABLE 14: FOB Shanghai prices of main herbicides in China, 8 Dec., 2023, USD/t

Product	20231108	20231208
98% 2,4-D technical	2,313.05	2,177.4
92% Acetochlor technical	3,975.4	3,942.93
97% Atrazine technical	4,047.22	3,949.4
96% Bensulfuron-methyl technical	20,437.97	19,943.98
92% Butachlor technical	2,964.44	2,992.54
95% Clomazone technical	12,174.39	10,908.92
95% Cyhalofop-butyl technical	16,178.43	16,995.68
97% Diuron technical	5,329.85	5,212.67
98% Fenclorim technical	14,486.53	14,209.97
95% Fenoxaprop-P-ethyl technical	20,990.88	19,263.51
96% Fluroxypyr technical	13,088.41	13,074.85
95% Fomesafen technical	18,283.57	18,456.88
95% Glufosinate ammonium technical	8,102.37	9,161.74
95% Glyphosate technical	4,507.55	4,200.26
95% Haloxyfop-P-methyl technical	16,107.06	15,957.1
97% Metolachlor technical	5,124.21	5,172.78
95% Metsulfuron-methyl technical	18,438.02	18,612.79
95% Nicosulfuron technical	25,480.24	24,595.07
97% Oxyfluorfen technical	19,051.74	18,569.15
42% Paraquat TK	3,050	2,835.77
95% Pendimethalin technical	7,924.05	7,999.17
95% Pretilachlor technical	4,334.65	4,234.59
97% Pyrazosulfuron-ethyl technical	30,614.2	29,530.87





Product	20231108	20231208
80% Quinclorac technical	18,152.89	18,324.97
95% Quizalofop-P-ethyl technical	25,180.8	24,182.86
95% Tribenuron-methyl technical	11,261.45	11,368.2
95% Trifluralin technical	5,382.97	5,434

Note: FOB price is calculated mainly based on ex-works price, tax refund, value added tax rate, exchange rate, etc.

Source: CCM

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